



REMR Material Data Sheet CM-PC-1.31

CONCRETE PATCHING MATERIALS: FONDAG

1. NAME

Fondag

applications suggested by the manufacturer:

2. MANUFACTURER

Lafarge Calcium Aluminates
P.O. Box 5806
Chesapeake, VA 23324
Telephone: 804-543-8832 or
800-524-8463
FAX: 804-545-8933

- For industrial floors and surfaces subjected to high temperatures or spillage of hot materials.
- Anti-erosion concrete for dams and sewers.
- Bakery floors, freezer rooms, slaughter houses.
- Jet engine test pad.

3. DESCRIPTION

Fondag is a preblended, high-strength, resistant concrete designed for industrial floors and concrete surfaces subjected to high temperatures and abrasion. Its special characteristics are produced by the hard, dense, nonporous aggregates combined with a high calcium aluminate cement. It is available in 50-lb bags and 3,000-lb supersacks.

5. MANUFACTURER'S TECHNICAL DATA

Workability

Fondag provides a standard working time of 3 hr. This working time can be field-adjusted (retarded or accelerated) to customer specifics.

Tensile strength

800 psi after 24-hr moist curing at 68°F.

Static modulus of elasticity

$7 \cdot 10 \times 10^6$ psi after 24-hr moist curing at 68°F.

Compressive strength, psi, ASTM C 39

24 hr	7,000 - 9,000
7 days	8,000 - 10,000
28 days	11,000 - 13,000

Abrasion resistance, CRD-C-63

Fondag: 0.5% weight loss

4. USES

Fondag is used in harsh environments where portland cement concrete or other hydraulic cement products do not perform well. The material can be used to repair and overlay damaged concrete and used for new construction that is subjected to thermal shock and abrasion, erosion and corrosion, and high temperatures. Fondag can be used when high early strengths are needed. The manufacturer states that the material can be placed at temperatures as low as 0°F. Listed below are some

5,000 psi portland
cement concrete: 3.6% weight loss

Corrosion resistance

Fondag concrete, due to its low porosity and high durability, is resistant to a wide range of chemicals such as sugars, oils, fats, mild acids, sulfates, and many effluents in a pH range from 3.5 to 11. Fondag has an excellent corrosion resistance to hydrogen sulfide gas (commonly found in sewers) and can withstand that environment at pH 2.

Refractory characteristics

Mechanical strengths after heating at different temperatures.

<u>Temperature</u>	<u>Com- pressive strength, psi</u>	<u>Flexural strength, psi</u>
230°F (110°C)	12,000	1,400
500°F (310°C)	11,000	1,100
932°F (500°C)	9,000	1,000
1,472°F (800°C)	7,000	900
2,012°F (1,100°C)	4,000	700

Coefficient of thermal expansion

The total linear expansion of Fondag concrete after firing to 1,850°F (1,000°C) is approximately 1 percent. The coefficient of thermal expansion is 5×10^{-6} in./in./°F.

Linear shrinkage, % 28 days, ASTM C 490

0.07

Specific heats, BTU/lb/°F

32 to 69°F (0 to 20°C) is 0.220
32 to 572°F (0 to 300°C) is 0.235
32 to 1,112°F (0 to 600°C) is 0.250

6. MANUFACTURER'S GUIDANCE FOR APPLICATION

Fondag is mixed and placed using conventional concrete mixers and equipment. All equipment should be clean and free from excessive portland cement buildup. It is finished and cured following normal procedures used for conventional concrete. The mixing water and yields for the 50-lb bags and 3,000-lb supersacks are listed below:

	<u>Water, gal</u>		<u>Yield</u>
	<u>Minimum</u>	<u>Maximum</u>	
50-lb bag	0.5	0.55	0.32 ft ³
3,000-lb supersack	30.0	32.5	0.75 yd ³

For partial depth patching and overlaying of portland cement concrete with Fondag, the surface of the hardened concrete must be rough, clean, and presoaked with water prior to placement.

7. CORPS OF ENGINEERS' EVALUATION

<u>Properties</u>	<u>Test Method</u>	<u>Results</u>
Compressive strength, psi	ASTM C 39	insufficient
	6 hr	strength
	24 hr	8,380
	7 days	14,520
	28 days	15,650
	2 hr* ⁻¹	4,990
Flexural strength, 28 days, psi	ASTM C 78	1,370
Bond to con- crete, psi	ASTM C 882	>3,900

*⁻¹ Accelerator added to mixture.

<u>Properties</u>	<u>Test Method</u>	<u>Results</u>
Abrasion resistance, % loss by mass	CRD-C-63 24 hr 48 hr 72 hr	 1.09 1.53 2.00
Resistance to thermal cycling, compressive strength, psi, after 6 cycles* ⁻²	ASTM C 109 Control Thermal cycled	 19,100 10,600

*⁻² A thermal cycle is 6 hr at 940°F (504°C) and 18 hr at 73°F (23°C).

8. ENVIRONMENTAL CONSIDERATIONS

Reasonable caution should guide the preparation, repair, and cleanup phases of activities involving potentially hazardous and toxic chemical substances. Manufacturer's recommendations to protect occupational health and environmental quality should be carefully followed. Material safety data sheets must be obtained from the manufacturers of such materials. In cases where the effects of a chemical substance on occupational health or environmental quality are unknown, chemical substances should be treated as potentially hazardous toxic materials.

9. AVAILABILITY & COST

Availability: This material is marketed throughout the United States and Europe.

Cost: Fondag sells for \$12.00 per 50-lb bag (prices FOB, 1991, Chesapeake, VA).